Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303601F: *MILSATCOM Terminals*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	277.501	253.818	186.582	0.000	186.582	105.274	79.768	15.301	13.723	Continuing	Continuing
672487: *MILSATCOM Terminals*	277.501	253.818	186.582	0.000	186.582	105.274	79.768	15.301	13.723	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) Terminals program develops and fields equipment enabling users to communicate via legacy and future systems to include Milstar, Advanced Extremely High Frequency (AEHF), Ultra High Frequency (UHF) Follow-On (UFO), Wideband Global SATCOM (WGS), Defense Satellite Communication System (DSCS), Enhanced Polar Systems (EPS), and other military and commercial satellites, to support tactical Air and Space Expeditionary Force requirements and maintain essential connectivity for strategic forces. Program RDT&E currently includes the following program efforts:

1) Concept development work to identify commercial/military technology solutions to improve MILSATCOM terminal capabilities for the warfighters. Focus includes, but is not limited to, increasing throughput, facilitating sustainability, reducing footprint on user platform and supporting the Global Information Grid (GIG).

2) The Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) Increment 1 program will provide Extremely High Frequency (EHF) voice and data MILSATCOM for nuclear and conventional forces as well as airborne and ground command posts with connectivity to Milstar, AEHF, and Ehanced Polar System (EPS) satellites. FAB-T Increment 1 terminals will also support the command and control (C2) of Milstar, AEHF, and EPS satellites.

3) The High Data Rate - Radio Frequency (HDR-RF) Ground Terminal program will provide the high data rate SATCOM connectivity needed to support the Intelligence, Surveillance and Reconnaissance (ISR) community with High Bandwidth High Throughput (HBHT) capability. HDR-RF Ground Terminals will be used for Command & Control, Intelligence, Surveillance and Reconnaissance (C2ISR), and will support the full spectrum of operations from humanitarian support/disaster relief to a major theater war. HDR-RF Ground Terminals will be interoperable with WGS satellites and the High Data Rate Airborne Terminal (HDRAT) (formerly FAB-T Increment 2), to support Air Intelligence Surveillance Reconnaissance (AISR) data rates from 138Mbps to 274Mbps. HDR-RF Ground Terminals will include an HBHT Software Communications Architecture (SCA) compliant modem and will provide quad band (C-, X-, Ku- and Ka-band) SATCOM. HDR-RF Ground Terminals will be interoperable with legacy tactical terminals and operate worldwide with existing military and commercial spacecraft. The user of HDR-RF Ground Terminals is the Global Hawk Ground Mission Control Element (MCE). FY11 HDR-RF funds support Phase II risk reduction efforts supporting modem qualification with an operational waveform, test and evaluation, program office support, system engineering and other related activities.

4) The Joint Terminal Engineering Office (JTEO) provides tri-service coordination of terminal development, acquisition and fielding activities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Air Force	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0303601F: *MILSATCOM Terminals*

5) The Global Broadcast Service (GBS) provides for development, systems engineering and integration, test, Transmission Security (TRANSEC) compliance development, program office support of Receive Suites and continued analysis of ORD III requirements.

While the GBS program is in the Operations and Sustainment phase of its lifecycle, the Receive Suite efforts are still conducting development and are captured in this Budget Activity

6) The HDRAT will develop a high data rate SATCOM terminal solution in support of AISR platforms and other supporting activities. HDRAT will provide for secure Ka/Ku high data rate satellite links (over commercial and government owned assets) and line-of-sight communications supporting airborne intelligence, surveillance, and reconnaissance (AISR) platforms. This program will provide AISR platforms with antenna solutions, modem assemblies, and the appropriate waveforms capable of supporting high resolution sensor data and C2 links at speed up to 274 Mbps (platform and mission dependent).

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	334.182	257.693	0.000	0.000	0.000
Current President's Budget	277.501	253.818	186.582	0.000	186.582
Total Adjustments	-56.681	-3.875	186.582	0.000	186.582
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-56.681	-3.875	186.582	0.000	186.582

Change Summary Explanation

$10.0M was rescinded in the FY09 supplemental bill.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303601F: *MILSATCOM Terminals*	PROJECT 672487: *MILSATCOM Terminals*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
672487: *MILSATCOM Terminals*	277.501	253.818	186.582	0.000	186.582	105.274	79.768	15.301	13.723	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) Terminals program develops and fields equipment enabling users to communicate via legacy and future systems to include Milstar, Advanced Extremely High Frequency (AEHF), Ultra High Frequency (UHF) Follow-On (UFO), Wideband Global SATCOM (WGS), Defense Satellite Communication System (DSCS), Enhanced Polar Systems (EPS), and other military and commercial satellites, to support tactical Air and Space Expeditionary Force requirements and maintain essential connectivity for strategic forces. Program RDT&E currently includes the following program efforts:

1) Concept development work to identify commercial/military technology solutions to improve MILSATCOM terminal capabilities for the warfighters. Focus includes, but is not limited to, increasing throughput, facilitating sustainability, reducing footprint on user platform and supporting the Global Information Grid (GIG).

2) The Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) Increment 1 program will provide Extremely High Frequency (EHF) voice and data MILSATCOM for nuclear and conventional forces as well as airborne and ground command posts with connectivity to Milstar, AEHF, and Ehanced Polar System (EPS) satellites. FAB-T Increment 1 terminals will also support the command and control (C2) of Milstar, AEHF, and EPS satellites.

3) The High Data Rate - Radio Frequency (HDR-RF) Ground Terminal program will provide the high data rate SATCOM connectivity needed to support the Intelligence, Surveillance and Reconnaissance (ISR) community with High Bandwidth High Throughput (HBHT) capability. HDR-RF Ground Terminals will be used for Command & Control, Intelligence, Surveillance and Reconnaissance (C2ISR), and will support the full spectrum of operations from humanitarian support/disaster relief to a major theater war. HDR-RF Ground Terminals will be interoperable with WGS satellites and the High Data Rate Airborne Terminal (HDRAT) (formerly FAB-T Increment 2), to support Air Intelligence Surveillance Reconnaissance (AISR) data rates from 138Mbps to 274Mbps. HDR-RF Ground Terminals will include an HBHT Software Communications Architecture (SCA) compliant modem and will provide quad band (C-, X-, Ku- and Ka-band) SATCOM. HDR-RF Ground Terminals will be interoperable with legacy tactical terminals and operate worldwide with existing military and commercial spacecraft. The user of HDR-RF Ground Terminals is the Global Hawk Ground Mission Control Element (MCE). FY11 HDR-RF funds support Phase II risk reduction efforts supporting modem qualification with an operational waveform, test and evaluation, program office support, system engineering and other related activities.

4) The Joint Terminal Engineering Office (JTEO) provides tri-service coordination of terminal development, acquisition and fielding activities.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303601F: *MILSATCOM Terminals*	PROJECT 672487: *MILSATCOM Terminals*

5) The Global Broadcast Service (GBS) provides for development, systems engineering and integration, test, Transmission Security (TRANSEC) compliance development, program office support of Receive Suites and continued analysis of ORD III requirements.

While the GBS program is in the Operations and Sustainment phase of its lifecycle, the Receive Suite efforts are still conducting development and are captured in this Budget Activity

6) The HDRAT will develop a high data rate SATCOM terminal solution in support of AISR platforms and other supporting activities. HDRAT will provide for secure Ka/Ku high data rate satellite links (over commercial and government owned assets) and line-of-sight communications supporting airborne intelligence, surveillance, and reconnaissance (AISR) platforms. This program will provide AISR platforms with antenna solutions, modem assemblies, and the appropriate waveforms capable of supporting high resolution sensor data and C2 links at speed up to 274 Mbps (platform and mission dependent).

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MAJOR THRUST: MILSATCOM Terminals program develops and fields equipment enabling users to communicate via legacy and future systems to include Milstar, AEHF, UFO, WGS, DSCS, EPS, and other milita...	277.501	253.818	186.582	0.000	186.582
FY 2009 Accomplishments: In FY 2009: Continued concept development/prototype demonstrations/MILSATCOM Terminal roadmap. Continued development of FAB-T Increment 1 Terminal. Continued development of the HDR-RF Ground Terminal. Continued support for the JTEO. Continued program support and other related activities.					
FY 2010 Plans: In FY 2010: Continue concept development/prototype demonstrations/MILSATCOM Terminal roadmap. Continue development of FAB-T Increment 1 Terminal. Continue development of the HDR-RF Ground Terminal. Continue support for the JTEO. Develop GBS rucksack terminal. Continue program support and other related activities.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: In FY 2011: Continue concept development/prototype demonstrations/MILSATCOM Terminal roadmap. Continue development of FAB-T Increment 1 Terminal. Continue development of the HDR-RF Ground Terminal. Continue support for the JTEO. Continue program support and other related activities. *FY 2011 OCO Plans:* In FY 2011 OCO: Not Applicable.					
Accomplishments/Planned Programs Subtotals	277.501	253.818	186.582	0.000	186.582

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• PE 0303601F: *MILSATCOM Terminals, APAF*	0.000	72.598	140.488	0.000	140.488	266.932	226.321	105.790	58.264	0.000	0.000
• PE 0303601F (1): *MILSATCOM Terminals, OPAF*	105.919	106.536	219.634	0.000	219.634	368.487	340.066	250.769	100.679	0.000	0.000

D. Acquisition Strategy

FAB-T provides a Family of Beyond Line-of-Sight (BLOS) satellite communications (SATCOM) and Line-of-Sight (LOS) terminals with an open architecture to satisfy the requirements identified in the Advanced Wideband Terminal (AWT) and Command Post Terminal (CPT) Operational Requirements Documents (ORDs) and FAB-T Inc 1 Capability Development Document (CDD).

Increment 1 provides the layered architecture which enables support for evolving and new communication capabilities and technologies. Capabilities include transmission and reception of voice, data, imagery, and video as well as broadcast reception over protected and LOS systems. Increment 1 also provides the capability for air and ground communications using the Milstar Extremely High Frequency (EHF) and Advanced Extremely High Frequency (AEHF) waveforms. Increment

Exhibit R-2A, RDT&E Project Justification: PB 2011 Air Force		DATE: February 2010
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1 terminals are planned for the B-2, B-52, and RC-135 aircraft and to upgrade the existing Command Post Terminals (CPTs) located on the ground (fixed and transportable) and airborne on the E-4 and E-6 aircraft.

The HDR-RF Ground Terminal Program consists of three Phases. Phase 1, the Ground Modem Application Demonstration phase, consists of multiple contractors developing an SCA version 2.2.1 compliant, HDR-RF Ground HBHT modem, which will port/run a Government provided test waveform. This phase culminates in a demonstration/test of the vendor's modem hardware and facilitates HBHT SCA modem availability when the HDRAT developed operational waveform is complete. Phase 2 consists of porting and demonstrating of the HDRAT developed operational waveform, and qualifying the modem. Phase 3 consists of integrating/qualifying the HDR-RF ground modem into an existing Ground Multi-band Terminals, obtaining appropriate certifications, producing, and fielding the system to communicate over WGS using transponded Ka-band satellite communications.

GBS provides warfighters with a worldwide, seamless, high throughput broadcast information service to support today's and tomorrow's mission. The Receive Suite (RS) development will satisfy the portable receive suite requirements identified in the GBS Operational Requirements Document. (ORD) III Block-3. RS provides Special Operations use of GBS in operational areas; capabilities include reception of voice, data, imagery and video. The RS shall be manpackable and fit into a single rucksack with a weight limit of 20 pounds. The progam strategy is to design, develop, and test a RS for special operation use and testing and integration to fulfill the GBS TRANSEC requirement.

The development of High Data Rate SATCOM Solutions will support the Analysis of Alternatives (AoA) charged with providing high data rate satellite and line-of-sight communications for the Global Hawk unmanned aerial vehicle, and other platform. The resulting solution will provide for new antenna equipment; modem assemblies; updated high data rate waveforms; and program office support. Our aquisition strategy will be shaped by the AoA output and will le IAW statutory requirements.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303601F: *MILSATCOM Terminals*	PROJECT 672487: *MILSATCOM Terminals*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
FAB-T Development	C/CPAF	Boeing Corp Huntington Beach, CA	1,206.251	210.369	Jan 2010	120.901	Jan 2011	0.000		120.901	Continuing	Continuing	0.000
FAB-T	Various/ Various	Various Various	54.125	0.081	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	0.000
High Data Rate (HDR) RF Ground Terminal Development	C/FFP	Comtech Tempe, AZ	5.993	0.000		0.000		0.000		0.000	Continuing	Continuing	0.000
High Data Rate (HDR) RF Ground Terminal Development (1)	C/FFP	Raytheon Marborough, MA	6.365	0.000		0.000		0.000		0.000	Continuing	Continuing	0.000
High Data Rate (HDR) RF Ground Terminal Development (2)	C/FFP	L3 Comm Hauppauge, NY	1.767	0.000		0.000		0.000		0.000	0.000	1.767	0.000
High Data Rate (HDR) RF Ground Terminal Development (3)	TBD/TBD	TBD TBD	0.000	0.000		1.306	Jan 2011	0.000		1.306	0.000	1.306	0.000
High Data Rate (HDR) RF Air Terminal Development (merged with FAB-T beginning in FY06)	C/CPAF	Boeing Corp Huntington Beach, CA	13.787	0.000		0.000		0.000		0.000	0.000	13.787	0.000
Lasercom Terminal Development Studies	C/FFP	Various Various	30.395	0.000		0.000		0.000		0.000	0.000	30.395	0.000
Global Broadcast Service (GBS)	Various/ Various	Various Various	0.000	3.536	Mar 2010	0.000		0.000		0.000	0.000	3.536	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force		DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
High Data Rate Airborne Terminal (HDRAT)	TBD/TBD	TBD TBD	0.000	0.000		18.879	Apr 2011	0.000		18.879	0.000	18.879	0.000
		Subtotal	1,318.683	213.986		141.086		0.000		141.086			0.000

Remarks

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering Support	C/CPAF	MITRE Bedford MA	261.944	14.563	Jan 2010	17.479	Jan 2011	0.000		17.479	Continuing	Continuing	0.000
Systems Engineering/ Functional/Financial Support	Various/ Various	Various Various	257.995	14.481	Jan 2010	13.482	Jan 2011	0.000		13.482	Continuing	Continuing	0.000
Miscellaneous	Various/ Various	Various Various	39.623	5.218	Jan 2010	6.881	Jan 2011	0.000		6.881	Continuing	Continuing	0.000
		Subtotal	559.562	34.262		37.842		0.000		37.842			0.000

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Air Force		DATE: February 2010
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Various Programs	Various/ Various	AF Research Lab No text provided	32.961	5.570	Jan 2010	7.654	Jan 2011	0.000		7.654	Continuing	Continuing	0.000
Miscellaneous T&E	Various/ Various	Various Various	26.187	0.000		0.000		0.000		0.000	Continuing	Continuing	0.000
		Subtotal	59.148	5.570		7.654		0.000		7.654			0.000

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,937.393	253.818		186.582		0.000		186.582			0.000

Remarks

Total Prior Years Cost may include only FY 2009 data.

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Air Force		DATE: February 2010
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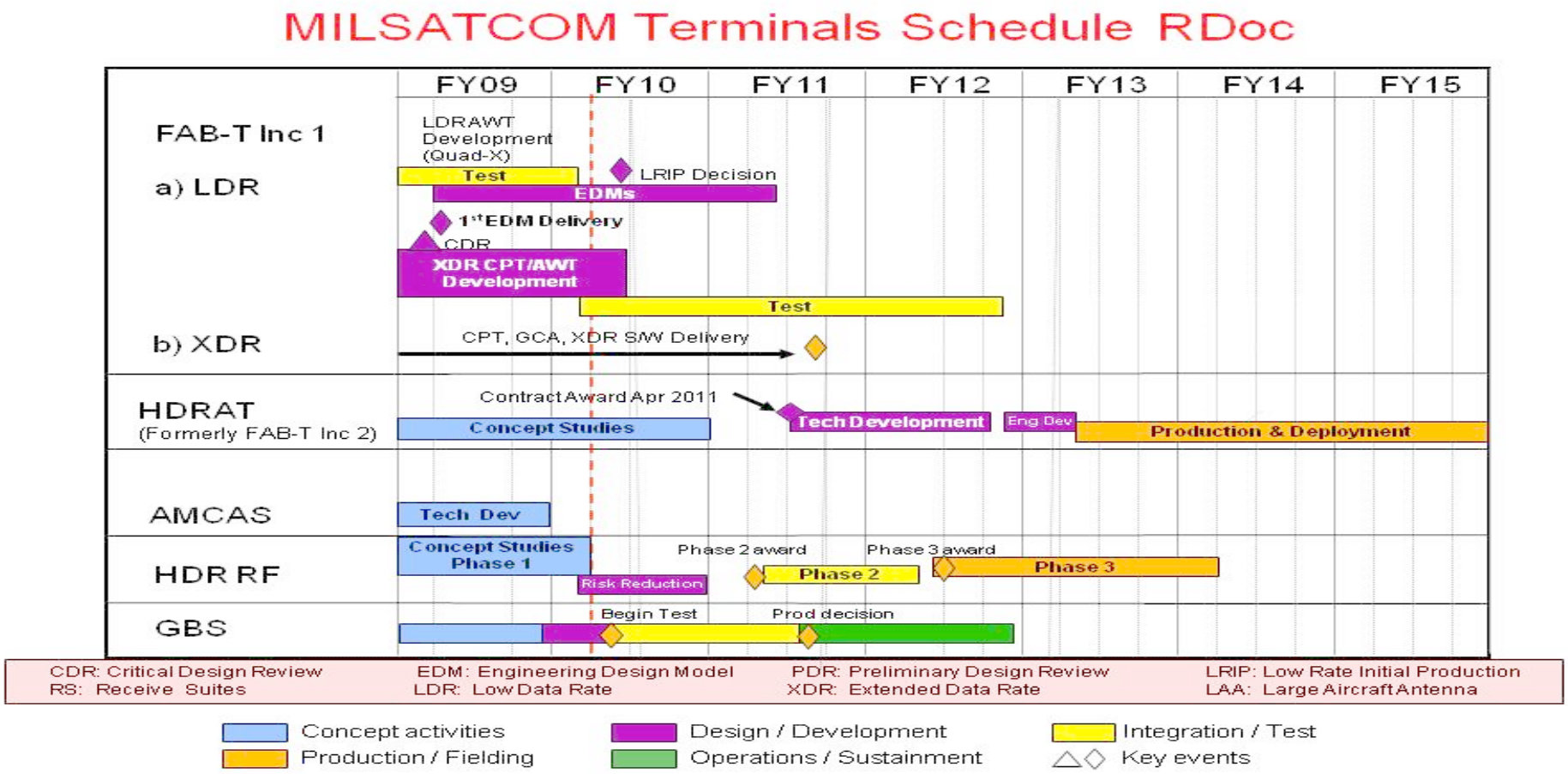

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Air Force		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303601F: *MILSATCOM Terminals*	PROJECT 672487: *MILSATCOM Terminals*

Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
FAB-T (Inc 1) System CDR	1	2009	1	2009
FAB-T 1st Engineering Development Model (EDM) Delivery of LDR terminal	2	2009	2	2009
FAB-T Inc 2 Concept Studies	1	2009	4	2010
GBS Receive Suite Award	2	2010	2	2010
HDRAT Contract Award	3	2011	3	2011